

Name: _____ Lab Day/Time: _____

Eye and Ear Study Guide, Chapter 20

Part I. Clinical Applications

1. An infant girl with strabismus is brought into the clinic. Describe what the condition is and what therapy should be tried before surgery?

Strabismus is a misalignment of the visual axes and loss of binocular vision. It can be due to an underacting or overacting eye muscle, abnormal innervation, physical trauma, or a central processing problem. The condition is particularly dangerous in infants as it can result in permanent loss of vision in the “weaker” eye if not corrected during early childhood. Initial therapy usually includes intermittent patching of the good eye before more invasive procedures such as surgery.

2. A man in his early 60's come into the clinic complaining of fuzzy vision. An eye examination reveals clouding of his lenses. What is his problem and what factors might have contributed to it?

The condition is cataracts. The lens becomes cloudy due to changes in the structure of the lens crystallin proteins. Cataracts often occur with aging but may also be caused by smoking, injury, excessive exposure to ultraviolet rays, certain medications (such as long-term use of steroids), or complications of other diseases (diabetes).

3. Albinism is a condition in which melanin pigment is not made. How does albinism affect vision and why?

People with albinism generally have poor vision because, without pigment within the eye (in the choroid and pigmented layer of the retina), light scatters before it can be properly focused.

4. A child is brought to the speech therapist because she does not pronounce high-pitched sounds (like “s”). If it is determined that the spiral organ of Corti is the source of the problem, which region of the organ would be defective?

The proximal end of the organ of Corti, close to the oval window.

5. Brian is brought to the clinic by his parents, who noticed that his right eye does not rotate laterally very well. The doctor explains that the nerve serving the lateral rectus muscle is not functioning properly. To what nerve is he referring?

Abducens nerve, cranial nerve VI.

6. When Mrs. Martinez visits her ophthalmologist, she complains of vision loss in her right eye. The intraocular pressure of that eye is found to be abnormally elevated. What is the name of

Mrs. Martinez's probable condition? What causes it? What might be the outcome if the problem is not corrected?

The condition is Glaucoma. The cause is an abnormally high intraocular pressure due to a buildup of aqueous humor which may be do to an over production of aqueous humor or in most cases, an inadequate drainage of aqueous humor. If not corrected the persistent pressure results in a progression from mild visual impairment to irreversible destruction of neurons in the retina, damage to the optic nerve, and blindness.

7. A child is brought into the clinic complaining of an earache. Examination reveals the child has a fever and a reddening and outward bulging of the eardrum, which may rupture unless prompt treatment is received. What is the condition, what might be the cause, and what is the treatment?

The condition is **otitis media** which is an acute infection of the middle ear caused mainly by bacteria and associated with infections of the nose and throat. Bacteria passing into the auditory tube from the nasopharynx are the primary cause of middle ear infections. Children are more susceptible than adults because their auditory tubes are almost horizontal, which decreases drainage. Treatment would include antibiotics and depending on the size of the bulging eardrum **tympanocentesis** might be performed which is the insertion of a needle through the anterior portion of the tympanic membrane, and aspirate the contents. Inserting of ear tubes (**tympanotomy** or **tympanostomy**) might also be recommended especially if the disorder occurs frequently. Ear tubes provide a pathway for the drainage of fluid from the middle ear.

Part II

1. palpebral fissure
2. tarsal (Meibomian)
3. conjunctiva (bulbar)
4. sebaceous ciliary glands
5. excess lacrimal fluid (tears) flows through the nasolacrimal duct into the nasal cavity
6. fibrous, vascular, retinal (nervous)
7. sclera
8. cornea
9. choroid
10. ciliary processes; ciliary muscle; ciliary
11. iris; pupil
12. nonvisual; visual
13. photoreceptor, bipolar cell, ganglion cell
14. cones; fovea centralis
15. optic disk; absence
16. crystallins
17. transparent; suspensory
18. aqueous humor; vitreous body
19. vitreous chamber
20. ciliary processes; scleral venous
21. glaucoma
22. optic chiasma
23. occipital
24. auricle (pinna)
25. external auditory canal (meatus); ceruminous
26. tympanic membrane (eardrum)
27. malleus, incus, stapes
28. oval window
29. tensor tympani; stapedius
30. semicircular canals
31. bony labyrinth
32. endolymph
33. perilymph
34. membranous labyrinth
35. vestibule
36. utricle and saccule
37. ampula
38. malleus
39. oval
40. perilymph
41. tectorial
42. cochlear; VIII

Part III

1. maculae; utricle; saccule
2. stereocilia; kinocilium
3. otolithic membrane
4. vestibular; VIII
5. cristae; acceleration or deceleration
6. cupula
7. motion sickness

8. senile macular degeneration
9. otitis media
10. sensorineural deafness
11. Meniere's syndrome
12. conduction deafness
13. T
14. T
15. F
16. oval
17. cones
18. aqueous humor

Part IV

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|--------------------------------|--|---------------|
| 1. pinna (auricle) | 21. tectoral | 41. B |
| 2. External auditory
meatus | 22. stereocilia | 42. C |
| 3. ceruminous | 23. cochlear | 43. D |
| 4. tympanic membrane | 24. palpebral | 44. B |
| 5. external ear | 25. tears | No number = B |
| 6. middle ear | 26. fovea centralis | 45. E |
| 7. ossicles | 27. neural tunic | 46. D |
| 8. malleus | 28. helicotrema | 47. C |
| 9. incus | 29. three-dimensional
relationships | 48. C |
| 10. stapes | 30. otitis media | 49. B |
| 11. Eustachian tube | 31. ear wax | 50. D |
| 12. nasopharynx | 32. inner ear | 51. C |
| 13. oval window | 33. equilibrium | 52. B |
| 14. perilymph | 34. B | 53. C |
| 15. scala vestibuli | 35. C | 54. D |
| 16. scala vestibuli | 36. D | 55. B |
| 17. scala tympani | 37. C | 56. C |
| 18. basilar membrane | 38. C | 57. C |
| 19. round window | 39. A | 58. C |
| 20. organ of corti | 40. C | |